

WHAT IS CLAIMED IS:

1. A method of identifying an inhibitor of fungus-induced eosinophil degranulation, said method comprising determining whether or not a test compound reduces the amount
5 of eosinophil degranulation induced by a fungal preparation, wherein said reduction indicates that said test compound is said inhibitor.
2. The method of claim 1, wherein said fungal preparation comprises a fungus
extract.
- 10 3. The method of claim 2, wherein said fungus extract is selected from the group consisting of *Alternaria* extracts, *Candida* extracts, *Aspergillus* extracts, and *Cladisporium* extracts.
- 15 4. The method of claim 1, wherein said fungal preparation comprises supernatant collected from a fungus culture.
5. The method of claim 4, wherein said fungus culture is selected from the group consisting of *Alternaria* cultures, *Candida* cultures, *Aspergillus* cultures, and
20 *Cladisporium* cultures.
6. The method of claim 1, wherein the amount of eosinophil degranulation is determined by measuring major basic protein or eosinophil-derived neurotoxin.
- 25 7. A method of identifying a fungal component that induces eosinophil degranulation, said method comprising:
 - (a) contacting an eosinophil with a test component, wherein said test component is a component of a fungus, and
 - (b) determining whether or not said test component induced said eosinophil to
30 degranulate, wherein the presence of degranulation indicates that said test component is said fungal component.

8. The method of claim 7, wherein said test component comprises a polypeptide obtained from a fungus extract.

9. The method of claim 8, wherein said fungus extract is selected from the group consisting of *Alternaria* extracts, *Candida* extracts, *Aspergillus* extracts, and *Cladisporium* extracts.

10. The method of claim 8, wherein said polypeptide is obtained by fractionating said fungus extract.

11. The method of claim 7, wherein said test component comprises a polypeptide obtained from the supernatant of a fungus culture.

12. The method of claim 11, wherein said fungus culture is selected from the group consisting of *Alternaria* cultures, *Candida* cultures, *Aspergillus* cultures, and *Cladisporium* cultures.

13. The method of claim 11, wherein said polypeptide is obtained by fractionating said supernatant.

14. The method of claim 7, wherein the degranulation of said eosinophil is determined by measuring major basic protein or eosinophil-derived neurotoxin.

15. A method of identifying an inhibitor of eosinophil fungus attack, said method comprising determining whether or not a test compound reduces the amount of eosinophil fungus attack induced by a sample obtained from a culture comprising cells from a chronic rhinosinusitis patient and a fungal preparation, wherein said reduction indicates that said test compound is said inhibitor.

16. The method of claim 15, wherein said sample comprises a supernatant.

17. The method of claim 15, wherein said cells are peripheral blood mononuclear cells.

5 18. The method of claim 15, wherein said fungal preparation comprises a fungus extract.

19. The method of claim 18, wherein said fungus extract is selected from the group consisting of *Alternaria* extracts, *Candida* extracts, *Aspergillus* extracts, and
10 *Cladisporium* extracts.

20. The method of claim 15, wherein said fungal preparation comprises media collected from a fungus culture.

15 21. The method of claim 20, wherein said fungus culture is selected from the group consisting of *Alternaria* cultures, *Candida* cultures, *Aspergillus* cultures, and *Cladisporium* cultures.

22. The method of claim 15, wherein the amount of said eosinophil fungus attack is
20 determined by light microscopy.

23. A method of identifying a factor that induces eosinophil fungus attack, said method comprising:

(a) contacting an eosinophil with a test component, wherein said test component
25 is a molecule present in a culture comprising cells from a chronic rhinosinusitis patient and a fungal preparation, and

(b) determining whether or not said test component induced said eosinophil to attack fungus, wherein the presence of eosinophil fungus attack indicates that said test component is said factor.

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24. The method of claim 23, wherein said test component comprises a polypeptide produced by a T cell from said chronic rhinosinusitis patient.

25. The method of claim 23, wherein said sample comprises a supernatant.

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26. The method of claim 23, wherein said cells are peripheral blood mononuclear cells.

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27. The method of claim 23, wherein said fungal preparation comprises a fungus extract.

28. The method of claim 27, wherein said fungus extract is selected from the group consisting of *Alternaria* extracts, *Candida* extracts, *Aspergillus* extracts, and *Cladisporium* extracts.

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29. The method of claim 23, wherein said fungal preparation comprises media collected from a fungus culture.

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30. The method of claim 29, wherein said fungus culture is selected from the group consisting of *Alternaria* cultures, *Candida* cultures, *Aspergillus* cultures, and *Cladisporium* cultures.

31. The method of claim 23, wherein the amount of said eosinophil fungus attack is determined by light microscopy.

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32. A method of identifying an inhibitor of a T cell response to fungus, said method comprising determining whether or not a test compound reduces the amount of activation of T cells induced by a sample comprising a fungal preparation, wherein said T cells are from a chronic rhinosinusitis patient, and wherein said reduction indicates that said test compound is said inhibitor.

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33. The method of claim 32, wherein said sample comprises peripheral blood mononuclear cells from said chronic rhinosinusitis patient.

34. The method of claim 32, wherein said fungal preparation comprises a fungus extract.

35. The method of claim 34, wherein said fungus extract is selected from the group consisting of *Alternaria* extracts, *Candida* extracts, *Aspergillus* extracts, and *Cladisporium* extracts.

36. The method of claim 32, wherein said fungal preparation comprises media collected from a fungus culture.

37. The method of claim 36, wherein said fungus culture is selected from the group consisting of *Alternaria* cultures, *Candida* cultures, *Aspergillus* cultures, and *Cladisporium* cultures.

38. The method of claim 32, wherein the amount of activation of said T cells is determined by measuring interleukin-5, interleukine-13, or interferon- γ .

39. A method of identifying a fungal antigen that induces a T cell response to fungus in a patient having chronic rhinosinusitis, said method comprising:

(a) incubating a T cell with antigen presenting cells and a test antigen, wherein said T cell is from a chronic rhinosinusitis patient, and wherein said test antigen is a molecule of a fungus, and

(b) determining whether or not said test antigen induced activation of said T cell, wherein the presence of activation of said T cell indicates that said test antigen is said fungal antigen.

40. The method of claim 39, wherein said antigen presenting cells comprise peripheral blood mononuclear cells from said chronic rhinosinusitis patient.

41. The method of claim 39, wherein said fungus is selected from the group consisting of *Alternaria*, *Candida*, *Aspergillus*, and *Cladisporium*.

5 42. The method of claim 39, wherein the amount of activation of said T cells is determined by measuring interleukin-5, interleukin-13, or interferon- γ .

43. A method for identifying a compound that inhibits an eosinophilic response, said method comprising:

- 10 (a) contacting an animal with a fungal antigen to induce eosinophilia in said animal,
- (b) administering a test compound to said animal, and
- (c) determining whether or not said test compound reduced said eosinophilia,
- wherein a reduction in said eosinophilia indicates that said test compound is a compound
- 15 that inhibits an eosinophilic response.

44. The method of claim 43, wherein said fungal antigen is an *Alternaria* antigen.

45. The method of claim 43, wherein said animal is a mouse.

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46. The method of claim 43, wherein said eosinophilia is present in the lungs of said animal.

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47. A method for identifying a compound that inhibits an eosinophilic response, said method comprising:

- (a) contacting an animal with a fungal antigen to induce eosinophilia in said animal,
- (b) administering a test compound to said animal, and
- (c) comparing the amount of eosinophilia in said animal with the amount of
- 30 eosinophilia in a control animal contacted with said fungal antigen and not said test compound,

wherein a decrease in the amount of eosinophilia in said animal relative to said control animal indicates that said test compound is a compound that inhibits an eosinophilic response.

5 48. The method of claim 47, wherein said fungal antigen is an *Alternaria* antigen.

49. The method of claim 47, wherein said animal is a mouse.

10 50. The method of claim 47, wherein said eosinophilia is present in the lungs of said animal.

51. A non-human animal comprising an eosinophilic response induced by administration of a fungal antigen to the nasal passages of said animal, wherein said eosinophilic response is present within a portion of the lungs of said animal.

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52. The animal of claim 51, wherein said fungal antigen is an *Alternaria* antigen.

53. The animal of claim 51, wherein said animal is a mouse.

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54. A population of non-human animals, wherein said population comprises more than 3 animals, wherein each animal of said population comprises an eosinophilic response induced by administration of a fungal antigen to the nasal passages of each animal, and wherein said eosinophilic response is present within a portion of the lungs of each animal.

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55. The population of claim 54, wherein said fungal antigen is an *Alternaria* antigen.

56. The population of claim 54, wherein each animal is a mouse.

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57. The population of claim 54, wherein said population comprises more than 5 animals.

58. The population of claim 54, wherein said population comprises more than 10 animals.